

WHAT IS CLAIMED IS:

1. A current released drug delivery device comprising one or more biocompatible protein materials, one or more conductive materials, one or more pharmacologically active agents and one or more biocompatible solvents, wherein the protein materials, conductive materials, pharmacologically active agents and biocompatible solvents are compressed to remove bulk biocompatible solvent and generate additional interactive forces to form the current released drug delivery device.
2. The current released drug delivery device of claim 1 wherein the biocompatible proteins may be natural, synthetic or genetically engineered.
3. The current released drug delivery device of claim 2 wherein the biocompatible proteins are natural proteins selected from the group consisting of elastin, collagen, albumin, keratin, fibronectin, silk, silk fibroin, actin, myosin, fibrinogen, thrombin, aprotinin and antithrombin III.
4. The current released drug delivery device of claim 2 wherein the biocompatible proteins are genetically engineered proteins made of blocks selected from the group consisting of elastinlike blocks, silklike blocks, collagenlike blocks, lamininlike blocks, fibronectinlike blocks and silklike and elastinlike blocks.

5. The current released drug delivery device of claim 1 wherein the biocompatible solvent is selected from the group consisting of water, dimethyl sulfoxide (DMSO), biocompatible alcohols, biocompatible acids, oils and biocompatible glycols.

6. The current released drug delivery device of claim 5 wherein the biocompatible solvent is water.

7. The current released drug delivery device of claim 1 wherein the one or more pharmacologically active agents are selected from the group consisting of analgesics, anesthetics, antipsychotic agents, steroids, antisteroids, corticosteroids, antiglaucoma agents, antialcohol agents, anti-coagulants agents, genetic material, antithrombogenic agents, anticancer agents, anti-Parkinson agents, antiepileptic agents, anti-inflammatory agents, anticonception agents, enzymes agents, cells, growth factors, antiviral agents, antibacterial agents, antifungal agents, hypoglycemic agents, antihistamine agents, chemoattractants, neutraceuticals, antiobesity, smoking cessation agents, obstetric agents and antiasmatic agents.

8. The current released drug delivery device of claim 1, wherein the pharmacologically active agents comprises a second, migration-vulnerable drug delivery device.

9. The current released drug delivery device of claim 8, wherein the migration-vulnerable drug delivery device comprises a plurality of lipospheres homogeneously dispersed within the drug delivery device.

10. The current released drug delivery device of claim 8, wherein the migration-vulnerable drug delivery device comprises a plurality of microspheres homogeneously dispersed within the drug delivery device.

5 11. The current released drug delivery device of claim 1, wherein the pharmacologically active agent is substantially homogeneously distributed within the drug delivery device.

12. The current released drug delivery device of claim 1 further comprising one or more biocompatible polymeric materials.

13. The current released drug delivery device of claim 12 wherein the one or more biocompatible polymeric materials are selected from the group consisting of epoxies, polyesters, acrylics, nylons, silicones, polyanhydride, polyurethane, polycarbonate, poly(tetrafluoroethylene), polycaprolactone, polyethylene oxide, polyethylene glycol, poly(vinyl chloride), polylactic acid, polyglycolic acid, polypropylene oxide, poly(alkylene)glycol, polyoxyethylene, sebacic acid, polyvinyl alcohol, 2-hydroxyethyl methacrylate, polymethyl methacrylate, 1,3-bis(carboxyphenoxy)propane, lipids, phosphatidylcholine, triglycerides, polyhydroxybutyrate, polyhydroxyvalerate, poly(ethylene oxide), poly ortho esters, poly (amino acids), polycyanoacrylates, polyphosphazenes, polysulfone, polyamine, poly (amido amines),
20 fibrin, graphite, flexible fluoropolymer, isobutyl-based, isopropyl styrene, vinyl pyrrolidone, cellulose acetate dibutyrate, silicone rubber, and copolymers of these.

14. The current released drug delivery device of claim 1 wherein the current released drug delivery device is crosslinked with one or more crosslinking agents.

15. The current released drug delivery device of claim 14 wherein the one or more crosslinking reagents are selected from the group consisting of glutaraldehyde, p-Azidobenzoyl Hydrazide, N-5-Azido 2-nitrobenzoyloxysuccinimide, N-Succinimidyl 6-[4'azido-2'nitro-phenylamino]hexanoate and 4-[p-Azidosalicylamido] butylamine.

16. The current released drug delivery device of claim 1 wherein the one or more conductive materials are selected from the group consisting of gold, silver, aluminum, platinum, tungsten, stainless steel, nitinol, copper, niobium, titanium, and ceramics

17. The current released drug delivery device of claim 1 wherein the one or more conductive materials comprises an alloy including one or more substances selected from the group consisting of gold, silver, tungsten, niobium, cobalt, titanium, zirconium, vanadium, molybdenum, nickel, iron, zinc, and copper.

18. A method of making a current released drug delivery device, comprising the steps of:

(a) preparing a coatable composition including the one or more biocompatible protein materials, one or more conductive materials, one or more pharmacologically active agents and the one or more biocompatible solvents;

(b) coating the composition to form a film;

(c) partially drying the coated film until the coated film can be formed into a cohesive body;

(d) forming said cohesive body; and compressing the cohesive body to form a current released drug delivery device.

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19. The method of making a current released drug delivery device of claim 18 wherein the conductive materials are not added until the coated film is partially dried.

20. The method of making a current released drug delivery device of claim 18 wherein the biocompatible proteins may be natural, synthetic or genetically engineered.

21. The method of making a current released drug delivery device of claim 19 wherein the biocompatible proteins may be natural, synthetic or genetically engineered.

22. The method of making a current released drug delivery device of claim 20 wherein the biocompatible proteins are natural proteins selected from the group consisting of elastin, collagen, albumin, keratin, fibronectin, silk, silk fibroin, actin, myosin, fibrinogen, thrombin, aprotinin and antithrombin III.

20 23. The method of making a current released drug delivery device of claim 21 wherein the biocompatible proteins are natural proteins selected from the group consisting of elastin, collagen, albumin, keratin, fibronectin, silk, silk fibroin, actin, myosin, fibrinogen, thrombin, aprotinin and antithrombin III.

24. The method of making a current released drug delivery device of claim 20 wherein the biocompatible proteins are genetically engineered proteins made of blocks selected from the group consisting of elastinlike blocks, silklike blocks, collagenlike blocks, lamininlike blocks, fibronectinlike blocks and silklike and elastinlike blocks.

25. The method of making a current released drug delivery device of claim 21 wherein the biocompatible proteins are genetically engineered proteins made of blocks selected from the group consisting of elastinlike blocks, silklike blocks, collagenlike blocks, lamininlike blocks, fibronectinlike blocks and silklike and elastinlike blocks.

26. The method of making a current released drug delivery device of claim 18 wherein the biocompatible solvent is selected from the group consisting of water, dimethyl sulfoxide (DMSO), biocompatible alcohols, biocompatible acids, oils and biocompatible glycols.

27. The method of making a current released drug delivery device of claim 19 wherein the biocompatible solvent is selected from the group consisting of water, dimethyl sulfoxide (DMSO), biocompatible alcohols, biocompatible acids, oils and biocompatible glycols.

28. The method of making a current released drug delivery device of claim 26 wherein the biocompatible solvent is water.

29. The method of making a current released drug delivery device of claim 27 wherein the biocompatible solvent is water.

30. The method of making a current released drug delivery device of claim 18 wherein the one or more pharmacologically active agents are selected from the group consisting of analgesics, anesthetics, anti psychotic agents, steroids, antisteroids, corticosteroids, antiglacoma agents, antialcohol agents, anticoagulants agents, genetic material, antithrombolytic agents, anticancer agents, anti-Parkinson agents, antiepileptic agents, anti-inflammatory agents, anticonception agents, enzymes agents, cells, growth factors, antiviral agents, antibacterial agents, antifungal agents, hypoglycemic agents, antihistamine agents, chemoattractants, neutraceuticals, antiobesity, smoking cessation agents and antiasmatic agents.

31. The method of making a current released drug delivery device of claim 19 wherein the one or more pharmacologically active agents are selected from the group consisting of analgesics, anesthetics, anti psychotic agents, steroids, antisteroids, corticosteroids, antiglacoma agents, antialcohol agents, anticoagulants agents, genetic material, antithrombolytic agents, anticancer agents, anti-Parkinson agents, antiepileptic agents, anti-inflammatory agents, anticonception agents, enzymes agents, cells, growth factors, antiviral agents, antibacterial agents, antifungal agents, hypoglycemic agents, antihistamine agents, chemoattractants, neutraceuticals, antiobesity, smoking cessation agents and antiasmatic agents.

32. The method of making a current released drug delivery device of claim 18, wherein the pharmacologically active agent comprises a second, migration-vulnerable drug delivery device.

33. The method of making a current released drug delivery device of claim 19, wherein the pharmacologically active agent comprises a second, migration-vulnerable drug delivery device.

5 34. The method of making a current released drug delivery device of claim 32, wherein the migration-vulnerable drug delivery device comprises a plurality of lipospheres, microspheres or a combination thereof homogeneously dispersed within the current released drug delivery device.

35. The method of making a current released drug delivery device of claim 33, wherein the migration-vulnerable drug delivery device comprises a plurality of lipospheres, microspheres or a combination thereof homogeneously dispersed within the current released drug delivery device.

36. The method of making a current released drug delivery device of claim 18, wherein the pharmacologically active agent is substantially homogeneously distributed within the current released drug delivery device.

37. The method of making a current released drug delivery device of claim 19, wherein the pharmacologically active agent is substantially homogeneously distributed within the current released drug delivery device.

38. The method of making a current released drug delivery device of claim 18 further comprising one or more biocompatible polymeric materials.

39. The method of making a current released drug delivery device of claim 19 further comprising one or more biocompatible polymeric materials.

40. The method of making a current released drug delivery device of claim 38 wherein the one or more biocompatible polymeric materials are selected from the group consisting of epoxies, polyesters, acrylics, nylons, silicones, polyanhydride, polyurethane, polycarbonate, poly(tetrafluoroethylene), polycaprolactone, polyethylene oxide, polyethylene glycol, poly(vinyl chloride), polylactic acid, polyglycolic acid, polypropylene oxide, poly(alkylene)glycol, polyoxyethylene, sebacic acid, polyvinyl alcohol, 2-hydroxyethyl methacrylate, polymethyl methacrylate, 1,3-bis(carboxyphenoxy)propane, lipids, phosphatidylcholine, triglycerides, polyhydroxybutyrate, polyhydroxyvalerate, poly(ethylene oxide), poly ortho esters, poly (amino acids), polycynoacrylates, polyphosphazenes, polysulfone, polyamine, poly (amido amines), fibrin, graphite, flexible fluoropolymer, isobutyl-based, isopropyl styrene, vinyl pyrrolidone, cellulose acetate dibutyrate, silicone rubber, and copolymers of these.

41. The method of making a current released drug delivery device of claim 39 wherein the one or more biocompatible polymeric materials are selected from the group consisting of epoxies, polyesters, acrylics, nylons, silicones, polyanhydride, polyurethane, polycarbonate, poly(tetrafluoroethylene), polycaprolactone, polyethylene oxide, polyethylene glycol, poly(vinyl chloride), polylactic acid, polyglycolic acid, polypropylene oxide, poly(alkylene)glycol, polyoxyethylene, sebacic acid, polyvinyl alcohol, 2-hydroxyethyl methacrylate, polymethyl methacrylate, 1,3-bis(carboxyphenoxy)propane, lipids, phosphatidylcholine, triglycerides, polyhydroxybutyrate, polyhydroxyvalerate, poly(ethylene oxide), poly ortho esters, poly (amino

acids), polycynoacrylates, polyphophazenes, polysulfone, polyamine, poly (amido amines), fibrin, graphite, flexible fluoropolymer, isobutyl-based, isopropyl styrene, vinyl pyrrolidone, cellulose acetate dibutyrate, silicone rubber, and copolymers of these.

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42. The method of making a current released drug delivery device of claim 18 wherein the current released drug delivery device is crosslinked with one or more crosslinking agents.

43. The method of making a current released drug delivery device of claim 19 wherein the current released drug delivery device is crosslinked with one or more crosslinking agents.

44. The method of making a current released drug delivery device of claim 42 wherein the crosslinking agents are selected from the group consisting of glutaraldehyde, p-Azidobenzolyl Hydrazide, N-5-Azido-2 nitrobenzoyloxysuccinimide, N-Succinimidyl 6-[4'azido-2'nitro-phenylamino]hexanoate and 4 [p-Azidosalicylamido] butylamine.

45. The method of making a current released drug delivery device of claim 43 wherein the one or more crosslinking reagents are selected from the group consisting of glutaraldehyde, p-Azidobenzolyl Hydrazide, N-5-Azido 2-nitrobenzoyioxysuccinimide, N-Succinimidyl 6-[4'azido-2'nitro-phenylamino]hexanoate and 4-[p-Azidosalicylamido] butylamine.

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46. The method of making a current released drug delivery device of claim 18 wherein the one or more conductive materials are selected from the group consisting of gold, silver, aluminum, platinum, tungsten, stainless steel, nitinol, copper, niobium, titanium, and ceramics.

5 47. The method of making a current released drug delivery device of claim 19 wherein the one or more conductive materials are selected from the group consisting of gold, silver, aluminum, platinum, tungsten, stainless steel, nitinol, copper, niobium, titanium, and ceramics.

48. The method of making a current released drug delivery device of claim 18 wherein the one or more conductive materials comprises an alloy including one or more substances selected from the group consisting of gold, silver, tungsten, niobium, cobalt, titanium, zirconium, vanadium, molybdenum, nickel, iron, zinc, and copper.

49. The method of making a current released drug delivery device of claim 19 wherein the one or more conductive materials comprises an alloy including one or more substances selected from the group consisting of gold, silver, tungsten, niobium, cobalt, titanium, zirconium, vanadium, molybdenum, nickel, iron, zinc, and copper.

50. An electromatrix device comprising one or more biocompatible protein materials, one or
20 more conductive materials, zero or more pharmacologically active agents and one or more biocompatible solvents, wherein the protein materials, conductive materials, pharmacologically active agents and biocompatible solvents are compressed to remove bulk biocompatible solvent and generate additional interactive forces to form the electromatrix device.

51. The electromatrix device of claim 50 wherein the biocompatible proteins may be natural, synthetic or genetically engineered.

5 52. The electromatrix device of claim 51 wherein the biocompatible proteins are natural proteins selected from the group consisting of elastin, collagen, albumin, keratin, fibronectin, silk, silk fibroin, actin, myosin, fibrinogen, thrombin, aprotinin and antithrombin III.

10 53. The electromatrix device of claim 51 wherein the biocompatible proteins are genetically engineered proteins made of blocks selected from the group consisting of elastinlike blocks, silklike blocks, collagenlike blocks, lamininlike blocks, fibronectinlike blocks and silklike and elastinlike blocks.

15 54. The electromatrix device of claim 50 wherein the biocompatible solvent is selected from the group consisting of water, dimethyl sulfoxide (DMSO), biocompatible alcohols, biocompatible acids, oils and biocompatible glycols.

55. The electromatrix device of claim 54 wherein the biocompatible solvent is water.

20 56. The electromatrix device of claim 50 wherein the one or more pharmacologically active agents are selected from the group consisting of analgesics, anesthetics, antipsychotic agents, steroids, antisteroids, corticosteroids, antiglacoma agents, antialcohol agents, anti-coagulants agents, genetic material, antithrombogenic agents, anticancer agents, anti-Parkinson agents,

antiepileptic agents, anti-inflammatory agents, anticonception agents, enzymes agents, cells, growth factors, antiviral agents, antibacterial agents, antifungal agents, hypoglycemic agents, antihistamine agents, chemoattractants, neutraceuticals, antiobesity, smoking cessation agents, obstetric agents and antiasmatic agents.

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57. The electromatrix device of claim 50, wherein the pharmacologically active agents comprises a second, migration-vulnerable drug delivery device.

58. The electromatrix device of claim 57, wherein the migration-vulnerable drug delivery device comprises a plurality of lipospheres homogeneously dispersed within the electromatrix device.

59. The electromatrix device of claim 57, wherein the migration-vulnerable drug delivery device comprises a plurality of microspheres homogeneously dispersed within the electromatrix device.

60. The electromatrix device of claim 50, wherein the pharmacologically active agent is substantially homogeneously distributed within the electromatrix device.

61. The electromatrix device of claim 50 further comprising one or more biocompatible polymeric materials.

62. The electromatrix device of claim 61 wherein the one or more biocompatible polymeric materials are selected from the group consisting of epoxies, polyesters, acrylics, nylons, silicones, polyanhydride, polyurethane, polycarbonate, poly(tetrafluoroethylene), polycaprolactone, polyethylene oxide, polyethylene glycol, poly(vinyl chloride), polylactic acid, polyglycolic acid, polypropylene oxide, poly(alkylene)glycol, polyoxyethylene, sebacic acid, polyvinyl alcohol, 2-hydroxyethyl methacrylate, polymethyl methacrylate, 1,3-bis(carboxyphenoxy)propane, lipids, phosphatidylcholine, triglycerides, polyhydroxybutyrate, polyhydroxyvalerate, poly(ethylene oxide), poly ortho esters, poly (amino acids), polycynoacrylates, polyphosphazenes, polysulfone, polyamine, poly (amido amines), fibrin, graphite, flexible fluoropolymer, isobutyl-based, isopropyl styrene, vinyl pyrrolidone, cellulose acetate dibutyrate, silicone rubber, and copolymers of these.

63. The electromatrix device of claim 50 wherein the current released drug delivery device is crosslinked with one or more crosslinking agents.

64. The electromatrix device of claim 63 wherein the one or more crosslinking reagents are selected from the group consisting of glutaraldehyde, p-Azidobenzoyl Hydrazide, N-5-Azido 2-nitrobenzoyloxysuccinimide, N-Succinimidyl 6-[4'azido-2'nitro-phenylamino]hexanoate and 4-[p-Azidosalicylamido] butylamine.

65. The electromatrix device of claim 50 wherein the one or more conductive materials are selected from the group consisting of gold, silver, aluminum, platinum, tungsten, stainless steel, nitinol, copper, niobium, titanium, and ceramics

66. The electromatrix device of claim 50 wherein the one or more conductive materials comprises an alloy including one or more substances selected from the group consisting of gold, silver, tungsten, niobium, cobalt, titanium, zirconium, vanadium, molybdenum, nickel, iron, zinc,
5 and copper.

67. A method of making an electromatrix device, comprising the steps of:

(a) preparing a coatable composition including the one or more biocompatible protein materials, one or more conductive materials, one or more pharmacologically active agents and the one or more biocompatible solvents;

(b) coating the composition to form a film;

(c) partially drying the coated film until the coated film can be formed into a cohesive body;

(d) forming said cohesive body; and compressing the cohesive body to form an electromatrix .

68. The method of making an electromatrix device of claim 67 wherein the conductive materials are not added until the coated film is partially dried.

69. The method of making an electromatrix device of claim 67 wherein the biocompatible proteins may be natural, synthetic or genetically engineered.

70. The method of making an electromatrix device of claim 68 wherein the biocompatible proteins may be natural, synthetic or genetically engineered.

71. The method of making an electromatrix device of claim 69 wherein the biocompatible proteins are natural proteins selected from the group consisting of elastin, collagen, albumin, keratin, fibronectin, silk, silk fibroin, actin, myosin, fibrinogen, thrombin, aprotinin and antithrombin III.

72. The method of making an electromatrix device of claim 70 wherein the biocompatible proteins are natural proteins selected from the group consisting of elastin, collagen, albumin, keratin, fibronectin, silk, silk fibroin, actin, myosin, fibrinogen, thrombin, aprotinin and antithrombin III.

73. The method of making an electromatrix device of claim 69 wherein the biocompatible proteins are genetically engineered proteins made of blocks selected from the group consisting of elastinlike blocks, silklike blocks, collagenlike blocks, lamininlike blocks, fibronectinlike blocks and silklike and elastinlike blocks.

74. The method of making an electromatrix device of claim 70 wherein the biocompatible proteins are genetically engineered proteins made of blocks selected from the group consisting of elastinlike blocks, silklike blocks, collagenlike blocks, lamininlike blocks, fibronectinlike blocks and silklike and elastinlike blocks.

75. The method of making an electromatrix device of claim 67 wherein the biocompatible solvent is selected from the group consisting of water, dimethyl sulfoxide (DMSO), biocompatible alcohols, biocompatible acids, oils and biocompatible glycols.

5 76. The method of making an electromatrix device of claim 68 wherein the biocompatible solvent is selected from the group consisting of water, dimethyl sulfoxide (DMSO), biocompatible alcohols, biocompatible acids, oils and biocompatible glycols.

77. The method of making an electromatrix device of claim 75 wherein the biocompatible solvent is water.

78. The method of making an electromatrix device of claim 76 wherein the biocompatible solvent is water.

79. The method of making an electromatrix device of claim 67 wherein the one or more pharmacologically active agents are selected from the group consisting of analgesics, anesthetics, anti psychotic agents, steroids, antisteroids, corticosteroids, antiglacoma agents, antialcohol agents, anticoagulants agents, genetic material, antithrombolytic agents, anticancer agents, anti-Parkinson agents, antiepileptic agents, anti-inflammatory agents, anticonception agents, enzymes agents, cells, growth factors, antiviral agents, antibacterial agents, antifungal agents, hypoglycemic agents, antihistamine agents, chemoattractants, neutraceuticals, antiobesity, smoking cessation agents and antiasmatic agents.

80. The method of making an electromatrix device of claim 68 wherein the one or more pharmacologically active agents are selected from the group consisting of analgesics, anesthetics, anti psychotic agents, steroids, antisteroids, corticosteroids, antiglacoma agents, antialcohol agents, anticoagulants agents, genetic material, antithrombolytic agents, anticancer agents, anti-Parkinson agents, antiepileptic agents, anti-inflammatory agents, anticonception agents, enzymes agents, cells, growth factors, antiviral agents, antibacterial agents, antifungal agents, hypoglycemic agents, antihistamine agents, chemoattractants, neutraceuticals, antiobesity, smoking cessation agents and antiasmatic agents.

81. The method of making an electromatrix device of claim 67, wherein the pharmacologically active agent comprises a second, migration-vulnerable drug delivery device.

82. The method of making an electromatrix device of claim 68, wherein the pharmacologically active agent comprises a second, migration-vulnerable drug delivery device.

83. The method of making an electromatrix device of claim 81, wherein the migration-vulnerable drug delivery device comprises a plurality of lipospheres, microspheres or a combination thereof homogeneously dispersed within the electromatrix device.

84. The method of making an electromatrix device of claim 82, wherein the migration-vulnerable drug delivery device comprises a plurality of lipospheres, microspheres or a combination thereof homogeneously dispersed within the electromatrix device.

85. The method of making an electromatrix device of claim 67, wherein the pharmacologically active agent is substantially homogeneously distributed within the electromatrix device.

5 86. The method of making an electromatrix device of claim 68, wherein the pharmacologically active agent is substantially homogeneously distributed within the electromatrix device.

87. The method of making an electromatrix device of claim 67 further comprising one or more biocompatible polymeric materials.

88. The method of making an electromatrix device of claim 68 further comprising one or more biocompatible polymeric materials.

89. The method of making an electromatrix device of claim 87 wherein the one or more biocompatible polymeric materials are selected from the group consisting of epoxies, polyesters, acrylics, nylons, silicones, polyanhydride, polyurethane, polycarbonate, poly(tetrafluoroethylene), polycaprolactone, polyethylene oxide, polyethylene glycol, poly(vinyl chloride), polylactic acid, polyglycolic acid, polypropylene oxide, poly(alkylene)glycol, polyoxyethylene, sebacic acid, polyvinyl alcohol, 2-hydroxyethyl methacrylate, polymethyl methacrylate, 1,3-bis(carboxyphenoxy)propane, lipids, phosphatidylcholine, triglycerides, polyhydroxybutyrate, polyhydroxyvalerate, poly(ethylene oxide), poly ortho esters, poly (amino acids), polycynoacrylates, polyphosphazenes, polysulfone, polyamine, poly (amido amines),

fibrin, graphite, flexible fluoropolymer, isobutyl-based, isopropyl styrene, vinyl pyrrolidone, cellulose acetate dibutyrate, silicone rubber, and copolymers of these.

90. The method of making an electromatrix device of claim 88 wherein the one or more

5 biocompatible polymeric materials are selected from the group consisting of epoxies, polyesters, acrylics, nylons, silicones, polyanhydride, polyurethane, polycarbonate, poly(tetrafluoroethylene), polycaprolactone, polyethylene oxide, polyethylene glycol, poly(vinyl chloride), polylactic acid, polyglycolic acid, polypropylene oxide, poly(alkylene)glycol, polyoxyethylene, sebacic acid, polyvinyl alcohol, 2-hydroxyethyl methacrylate, polymethyl methacrylate, 1,3-bis(carboxyphenoxy)propane, lipids, phosphatidylcholine, triglycerides, polyhydroxybutyrate, polyhydroxyvalerate, poly(ethylene oxide), poly ortho esters, poly (amino acids), polycynoacrylates, polyphosphazenes, polysulfone, polyamine, poly (amido amines), fibrin, graphite, flexible fluoropolymer, isobutyl-based, isopropyl styrene, vinyl pyrrolidone, cellulose acetate dibutyrate, silicone rubber, and copolymers of these.

91. The method of making an electromatrix device of claim 67 wherein the current released drug delivery device is crosslinked with one or more crosslinking agents.

92. The method of making an electromatrix device of claim 68 wherein the current released
20 drug delivery device is crosslinked with one or more crosslinking agents.

93. The method of making an electromatrix device of claim 91 wherein the crosslinking agents are selected from the group consisting of glutaraldehyde, p-Azidobenzoyl Hydrazide,

N-5-Azido-2 nitrobenzoyloxysuccinimide, N-Succinimidyl

6-[4'azido-2'nitro-phenylamino]hexanoate and 4 [p-Azidosalicylamido] butylamine.

94. The method of making an electromatrix device of claim 92 wherein the one or more

5 crosslinking reagents are selected from the group consisting of glutaraldehyde, p-Azidobenzoyl

Hydazide, N-5-Azido 2-nitrobenzoyloxysuccinimide, N-Succinimidyl

6-[4'azido-2'nitro-phenylamino]hexanoate and 4-[p-Azidosalicylamido] butylamine.

95. The method of making an electromatrix device of claim 67 wherein the one or more

conductive materials are selected from the group consisting of gold, silver, aluminum, platinum,
tungsten, stainless steel, nitinol, copper, niobium, titanium, and ceramics.

96. The method of making an electromatrix device of claim 68 wherein the one or more

conductive materials are selected from the group consisting of gold, silver, aluminum, platinum,
tungsten, stainless steel, nitinol, copper, niobium, titanium, and ceramics.

97. The method of making an electromatrix device of claim 67 wherein the one or more

conductive materials comprises an alloy including one or more substances selected from the
group consisting of gold, silver, tungsten, niobium, cobalt, titanium, zirconium, vanadium,

20 molybdenum, nickel, iron, zinc, and copper.

98. The method of making an electromatrix device of claim 68 wherein the one or more

conductive materials comprises an alloy including one or more substances selected from the

group consisting of gold, silver, tungsten, niobium, cobalt, titanium, zirconium, vanadium, molybdenum, nickel, iron, zinc, and copper.

99. A protein matrix coating for an implantable medical device comprising one or more
5 biocompatible protein materials, one or more conductive materials, one or more pharmacologically active agents and one or more biocompatible solvents, wherein the protein materials, conductive materials, pharmacologically active agents and biocompatible solvents are compressed to remove bulk biocompatible solvent and generate additional interactive forces to form the protein matrix coating.

100. The protein matrix coating for an implantable medical device of claim 99 wherein the biocompatible proteins may be natural, synthetic or genetically engineered.

101. The protein matrix coating for an implantable medical device of claim 100 wherein the biocompatible proteins are natural proteins selected from the group consisting of elastin, collagen, albumin, keratin, fibronectin, silk, silk fibroin, actin, myosin, fibrinogen, thrombin, aprotinin and antithrombin III.

102. The protein matrix coating for an implantable medical device of claim 100 wherein the
20 biocompatible proteins are genetically engineered proteins made of blocks selected from the group consisting of elastinlike blocks, silklike blocks, collagenlike blocks, lamininlike blocks, fibronectinlike blocks and silklike and elastinlike blocks.

103. The protein matrix coating for an implantable medical device of claim 99 wherein the biocompatible solvent is selected from the group consisting of water, dimethyl sulfoxide (DMSO), biocompatible alcohols, biocompatible acids, oils and biocompatible glycols.

5 104. The protein matrix coating for an implantable medical device of claim 103 wherein the biocompatible solvent is water.

105. The protein matrix coating for an implantable medical device of claim 99 wherein the one or more pharmacologically active agents are selected from the group consisting of analgesics, anesthetics, antipsychotic agents, steroids, antisteroids, corticosteroids, antiglacoma agents, antialcohol agents, anti-coagulants agents, genetic material, antithrombogenic agents, anticancer agents, anti-Parkinson agents, antiepileptic agents, anti-inflammatory agents, contraception agents, enzymes agents, cells, growth factors, antiviral agents, antibacterial agents, antifungal agents, hypoglycemic agents, antihistamine agents, chemoattractants, neutraceuticals, antiobesity, smoking cessation agents, obstetric agents and antiasmatic agents.

106. The protein matrix coating for an implantable medical device of claim 99, wherein the pharmacologically active agents comprises a second, migration-vulnerable drug delivery device.

20 107. The protein matrix coating for an implantable medical device of claim 106, wherein the migration-vulnerable drug delivery device comprises a plurality of lipospheres homogeneously dispersed within the protein matrix coating.

108. The protein matrix coating for an implantable medical device of claim 106, wherein the migration-vulnerable drug delivery device comprises a plurality of microspheres homogeneously dispersed within the protein matrix coating.

5 109. The protein matrix coating for an implantable medical device of claim 99, wherein the pharmacologically active agent is substantially homogeneously distributed within the protein matrix coating.

110. The protein matrix coating for an implantable medical device of claim 99 further comprising one or more biocompatible polymeric materials.

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111. The protein matrix coating for an implantable medical device of claim 110 wherein the one or more biocompatible polymeric materials are selected from the group consisting of epoxies, polyesters, acrylics, nylons, silicones, polyanhydride, polyurethane, polycarbonate, poly(tetrafluoroethylene), polycaprolactone, polyethylene oxide, polyethylene glycol, poly(vinyl chloride), polylactic acid, polyglycolic acid, polypropylene oxide, poly(alkylene)glycol, polyoxyethylene, sebacic acid, polyvinyl alcohol, 2-hydroxyethyl methacrylate, polymethyl methacrylate, 1,3-bis(carboxyphenoxy)propane, lipids, phosphatidylcholine, triglycerides, polyhydroxybutyrate, polyhydroxyvalerate, poly(ethylene oxide), poly ortho esters, poly (amino acids), polycynoacrylates, polyphosphazenes, polysulfone, polyamine, poly (amido amines), fibrin, graphite, flexible fluoropolymer, isobutyl-based, isopropyl styrene, vinyl pyrrolidone, cellulose acetate dibutyrate, silicone rubber, and copolymers of these.

112. The protein matrix coating for an implantable medical device of claim 99 wherein the current released drug delivery device is crosslinked with one or more crosslinking agents.

113. The protein matrix coating for an implantable medical device of claim 112 wherein the one or more crosslinking reagents are selected from the group consisting of glutaraldehyde, p-Azidobenzoyl Hydrazide, N-5-Azido 2-nitrobenzoyloxysuccinimide, N-Succinimidyl 6-[4'azido-2'nitro-phenylamino]hexanoate and 4-[p-Azidosalicylamido] butylamine.

114. The protein matrix coating for an implantable medical device of claim 99 wherein the one or more conductive materials are selected from the group consisting of gold, silver, aluminum, platinum, tungsten, stainless steel, nitinol, copper, niobium, titanium, and ceramics.

115. The protein matrix coating for an implantable medical device of claim 99 wherein the one or more conductive materials comprises an alloy including one or more substances selected from the group consisting of gold, silver, tungsten, niobium, cobalt, titanium, zirconium, vanadium, molybdenum, nickel, iron, zinc, and copper.

116. A method of making a protein matrix coating for an implantable medical device, comprising the steps of:

(a) preparing a coatable composition including the one or more biocompatible protein materials, zero or more pharmacologically active agents and the one or more biocompatible solvents;

(b) coating the composition to form a film;

(c) partially drying the coated film until the coated film can be formed into a cohesive body;

(d) forming said cohesive body;

(e) adding an implantable medical device to the cohesive body; and

5 (f) compressing the cohesive body and the medical device to form a protein matrix coating around the medical device.

117. The method of making a protein matrix coating for an implantable medical device of claim 116 wherein the biocompatible proteins may be natural, synthetic or genetically engineered.

118. The method of making a current released drug delivery device of claim 19 wherein the biocompatible proteins may be natural, synthetic or genetically engineered.

119. The method of making a protein matrix coating for an implantable medical device of claim 118 wherein the biocompatible proteins are natural proteins selected from the group consisting of elastin, collagen, albumin, keratin, fibronectin, silk, silk fibroin, actin, myosin, fibrinogen, thrombin, aprotinin and antithrombin III.

20 120. The method of making a protein matrix coating for an implantable medical device of claim 118 wherein the biocompatible proteins are genetically engineered proteins made of blocks selected from the group consisting of elastinlike blocks, silklike blocks, collagenlike blocks, lamininlike blocks, fibronectinlike blocks and silklike and elastinlike blocks.

121. The method of making a protein matrix coating for an implantable medical device of claim 116 wherein the biocompatible solvent is selected from the group consisting of water, dimethyl sulfoxide (DMSO), biocompatible alcohols, biocompatible acids, oils and biocompatible glycols.

122. The method of making a current released drug delivery device of claim 121 wherein the biocompatible solvent is water.

123. The method of making a protein matrix coating for an implantable medical device of claim 116 wherein the one or more pharmacologically active agents are selected from the group consisting of analgesics, anesthetics, anti psychotic agents, steroids, antisteroids, corticosteroids, antiglacoma agents, antialcohol agents, anticoagulants agents, genetic material, antithrombolytic agents, anticancer agents, anti-Parkinson agents, antiepileptic agents, anti-inflammatory agents, anticonception agents, enzymes agents, cells, growth factors, antiviral agents, antibacterial agents, antifungal agents, hypoglycemic agents, antihistamine agents, chemoattractants, neutraceuticals, antiobesity, smoking cessation agents and antiasmatic agents.

124. The method of making a protein matrix coating for an implantable medical device of claim 116, wherein the pharmacologically active agent comprises a second, migration-vulnerable drug delivery device.

125. The method of making a protein matrix coating for an implantable medical device of claim 124, wherein the migration-vulnerable drug delivery device comprises a plurality of lipospheres, microspheres or a combination thereof homogeneously dispersed within the protein matrix coating.

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126. The method of making a protein matrix coating for an implantable medical device of claim 116, wherein the pharmacologically active agent is substantially homogeneously distributed within the protein matrix coating.

127. The method of making a protein matrix coating for an implantable medical device of claim 116 further comprising one or more biocompatible polymeric materials.

128. The method of making a protein matrix coating for an implantable medical device of claim 127 wherein the one or more biocompatible polymeric materials are selected from the group consisting of epoxies, polyesters, acrylics, nylons, silicones, polyanhydride, polyurethane, polycarbonate, poly(tetrafluoroethylene), polycaprolactone, polyethylene oxide, polyethylene glycol, poly(vinyl chloride), polylactic acid, polyglycolic acid, polypropylene oxide, poly(akylene)glycol, polyoxyethylene, sebacic acid, polyvinyl alcohol, 2-hydroxyethyl methacrylate, polymethyl methacrylate, 1,3-bis(carboxyphenoxy)propane, lipids, phosphatidylcholine, triglycerides, polyhydroxybutyrate, polyhydroxyvalerate, poly(ethylene oxide), poly ortho esters, poly (amino acids), polycynoacrylates, polyphophazenes, polysulfone, polyamine, poly (amido amines), fibrin, graphite, flexible fluoropolymer, isobutyl-based,

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isopropyl styrene, vinyl pyrrolidone, cellulose acetate dibutyrate, silicone rubber, and copolymers of these.

129. The method of making a protein matrix coating for an implantable medical device of
5 claim 116 wherein the protein matrix material is crosslinked with one or more crosslinking agents.

130. The method of making a protein matrix coating for an implantable medical device of
claim 129 wherein the crosslinking agents are selected from the group consisting of
10 glutaraldehyde, p-Azidobenzoyl Hydrazide, N-5-Azido-2 nitrobenzoyloxysuccinimide,
N-Succinimidyl 6-[4'azido-2'nitro-phenylamino]hexanoate and 4 [p-Azidosalicylamido]
butylamine.

131. The method of making a protein matrix coating for an implantable medical device of
claim 116 wherein the one or more conductive materials are selected from the group consisting
15 of gold, silver, aluminum, platinum, tungsten, stainless steel, nitinol, copper, niobium, titanium,
and ceramics.

132. The method of making a protein matrix coating for an implantable medical device of
20 claim 116 wherein the one or more conductive materials comprises an alloy including one or
more substances selected from the group consisting of gold, silver, tungsten, niobium, platinum
cobalt, titanium, zirconium, vanadium, molybdenum, nickel, iron, zinc, and copper.

133. A protein matrix array comprising one or more biocompatible protein materials, zero or more pharmacologically active agents and one or more biocompatible solvents, wherein the protein materials, pharmacologically active agents and biocompatible solvents are compressed to remove bulk biocompatible solvent and generate additional interactive forces to form the protein matrix array.

134. A method of making a protein matrix array, comprising the steps of:

- (a) preparing a coatable composition comprising one or more biocompatible protein materials, zero or more pharmacologically active agents and one or more biocompatible solvents;
- (b) coating the composition to form a film;
- (c) partially drying the coated film until the coated film can be formed into a cohesive body;
- (d) forming said cohesive body; and compressing the cohesive body to form a protein matrix array.

135. A method of determining pharmacologically active agent to protein interaction comprising:

- (a) introducing a pharmacologically active agent to a protein matrix array comprising one or more biocompatible protein materials, zero or more pharmacologically active agents and one or more biocompatible solvents, wherein the protein materials, pharmacologically active agents and biocompatible solvents are compressed to remove bulk biocompatible solvent and generate additional interactive forces to form the protein matrix array;
- (b) testing for pharmacologically active agent to protein interaction.